



Summary of Major Changes Made to the Low Concentration Organic Analytical Service for Superfund (Water Matrix) (OLC02.1 to OLC03.2)

Office of Emergency and Remedial Response
Analytical Operations/Data Quality Center (5204G)

Quick Reference Fact Sheet

Under the legislative authority granted to the U.S. Environmental Protection Agency (EPA) under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), EPA develops standardized analytical methods for the measurement of various pollutants in environmental samples from known or suspected hazardous waste sites. Among the pollutants that are of concern to EPA at such sites are a series of volatile, semivolatile, and pesticide/Aroclor (pesticide/PCB) compounds that are analyzed using Gas Chromatography coupled with Mass Spectrometry (GC/MS) and Gas Chromatography with an Electron Capture Detector (GC/ECD). The Analytical Operations/Data Quality Center (AOC) of the Office of Emergency and Remedial Response (OERR) offers an analytical service that provides data from the analysis of water samples for low concentration organic compounds for use in the Superfund decision-making process. Through a series of standardized procedures and a strict chain-of-custody, the low concentration organic analytical service produces data of known and documented quality. This service is available through the Superfund Contract Laboratory Program (CLP).

OVERVIEW OF MAJOR CHANGES

The new low concentration organic analytical service provides a technical and contractual framework for laboratories to apply EPA/CLP analytical methods for the preparation, detection, and quantitative measurement of 50 volatile, 65 semivolatile, and 28 pesticide/Aroclor (pesticide/PCB) target compounds in water samples.

- i. All references to 14-day turnaround times were removed. With OLC03.2, laboratories now have 7-, 14-, or 21-day turnaround times for analyses after laboratory receipt of the last sample in the Sample Delivery Group (SDG).
- ii. Modified the number of days required for the distribution of noncompliance reports to laboratories from 10 to 7 days after data receipt.
- iii. The number of volatile and semivolatile compounds has been modified to include nine new volatile compounds and six new semivolatile compounds. The compounds that have been added are detailed in the **Modifications to Target Compounds** section and are shaded in Table 1.

- iv. Laboratories are now required to submit a computer-readable copy of the data contained within data reporting forms on high-density diskettes or via alternate means of electronic transmission approved in advance by EPA. The specifications of the electronic deliverable formats are detailed in Exhibit H. Delivery will be as specified in the laboratory Contract.
- v. Preliminary results may be requested through this analytical service, as detailed in Exhibit B. Preliminary results consist of Form I and Form I-TIC analytical results, by fraction, for field and Quality Control (QC) samples, submitted via telefacsimile or email upon prior approval by EPA.
- vi. Laboratories may be requested to perform modified analyses, as detailed in Exhibit A. The modifications will be within the scope of the SOW and may include, but are not limited to, analysis of additional analytes and/or lower quantitation limits.

MODIFICATION TO TARGET COMPOUNDS

Since the CLP began in 1980, compounds have been added and removed from the Target Compound List

Table 1. Target Compound List and Contract Required Quantitation Limits (CRQLs) in µg/L (OLC03.2)

| VOLATILES | Quantitation Limits µg/L | SEMOVOLATILES | Quantitation Limits µg/L | Quantitation Limits µg/L |
|---|-----------------------------|---------------------------------------|-----------------------------|----------------------------------|
| 1. Dichlorodifluoromethane | 0.5 | 51. Benzaldehyde | 5 | 101. Di-n-butylphthalate |
| 2. Chloromethane | 0.5 | 52. Phenol | 5 | 102. Fluoranthene |
| 3. Vinyl Chloride | 0.5 | 53. bis-(2-Chloroethyl)ether | 5 | 103. Pyrene |
| 4. Bromomethane | 0.5 | 54. 2-Chlorophenol | 5 | 104. Butylbenzylphthalate |
| 5. Chloroethane | 0.5 | 55. 2-Methylphenol | 5 | 105. 3,3'-Dichlorobenzidine |
| 6. Trichlorofluoromethane | 0.5 | 56. 2,2'-Oxybis(1-Chloropropane) | 5 | 106. Benzo(a)anthracene |
| 7. 1,1-Dichloroethene | 0.5 | 57. Acetophenone | 5 | 107. Chrysene |
| 8. 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.5 | 58. 4-Methylphenol | 5 | 108. bis-(2-Ethylhexyl)phthalate |
| 9. Acetone | 5 | 59. N-Nitroso-di-n-propylamine | 5 | 109. Di-n-octylphthalate |
| 10. Carbon Disulfide | 0.5 | 60. Hexachloroethane | 5 | 110. Benzo(b)fluoranthene |
| 11. Methyl Acetate | 0.5 | 61. Nitrobenzene | 5 | 111. Benzo(k)fluoranthene |
| 12. Methylene Chloride | 0.5 | 62. Isophorone | 5 | 112. Benzo(a)pyrene |
| 13. trans-1,2-Dichloroethene | 0.5 | 63. 2-Nitrophenol | 5 | 113. Indeno(1,2,3-cd)pyrene |
| 14. Methyl tert-Butyl Ether | 0.5 | 64. 2,4-Dimethylphenol | 5 | 114. Dibenzo(a,h)anthracene |
| 15. 1,1-Dichloroethane | 0.5 | 65. bis(2-Chloroethoxy)methane | 5 | 115. Benzo(g,h,i)perylene |
| 16. cis-1,2-Dichloroethene | 0.5 | 66. 2,4-Dichlorophenol | 5 | |
| 17. 2-Butanone | 5 | 67. Naphthalene | 5 | |
| 18. Bromochloromethane | 0.5 | 68. 4-Chloroaniline | 5 | |
| 19. Chloroform | 0.5 | 69. Hexachlorobutadiene | 5 | |
| 20. 1,1,1-Trichloroethane | 0.5 | 70. Caprolactam | 5 | |
| 21. Cyclohexane | 0.5 | 71. 4-Chloro-3-methylphenol | 5 | 116. alpha-BHC |
| 22. Carbon Tetrachloride | 0.5 | 72. 2-Methylnaphthalene | 5 | 117. beta-BHC |
| 23. Benzene | 0.5 | 73. Hexachlorocyclopentadiene | 5 | 118. delta-BHC |
| 24. 1,2-Dichloroethane | 0.5 | 74. 2,4,6-Trichlorophenol | 5 | 119. gamma-BHC (Lindane) |
| 25. Trichloroethene | 0.5 | 75. 2,4,5-Trichlorophenol | 20 | 120. Heptachlor |
| 26. Methylcyclohexane | 0.5 | 76. 1,1'-Biphenyl | 5 | 121. Aldrin |
| 27. 1,2-Dichloropropane | 0.5 | 77. 2-Chloronaphthalene | 5 | 122. Heptachlor epoxide |
| 28. Bromodichloromethane | 0.5 | 78. 2-Nitroaniline | 20 | 123. Endosulfan I |
| 29. cis-1,3-Dichloropropene | 0.5 | 79. Dimethylphthalate | 5 | 124. Dieldrin |
| 30. 4-Methyl-2-pentanone | 5 | 80. 2,6-Dinitrotoluene | 5 | 125. 4,4'-DDE |
| 31. Toluene | 0.5 | 81. Acenaphthylene | 5 | 126. Endrin |
| 32. trans-1,3-Dichloropropene | 0.5 | 82. 3-Nitroaniline | 20 | 127. Endosulfan II |
| 33. 1,1,2-Trichloroethane | 0.5 | 83. Acenaphthene | 5 | 128. 4,4'-DDD |
| 34. Tetrachloroethene | 0.5 | 84. 2,4-Dinitrophenol | 20 | 129. Endosulfan sulfate |
| 35. 2-Hexanone | 5 | 85. 4-Nitrophenol | 20 | 130. 4,4'-DDT |
| 36. Dibromochloromethane | 0.5 | 86. Dibenzofuran | 5 | 131. Methoxychlor |
| 37. 1,2-Dibromoethane | 0.5 | 87. 2,4-Dinitrotoluene | 5 | 132. Endrin ketone |
| 38. Chlorobenzene | 0.5 | 88. Diethylphthalate | 5 | 133. Endrin aldehyde |
| 39. Ethylbenzene | 0.5 | 89. Fluorene | 5 | 134. alpha-Chlordane |
| 40. Xylenes (total) | 0.5 | 90. 4-Chlorophenyl-phenylether | 5 | 135. gamma-Chlordane |
| 41. Styrene | 0.5 | 91. 4-Nitroaniline | 20 | 136. Toxaphene |
| 42. Bromoform | 0.5 | 92. 4,6-Dinitro-2-methylphenol | 20 | 137. Aroclor-1016 |
| 43. Isopropylbenzene | 0.5 | 93. N-Nitrosodiphenylamine | 5 | 138. Aroclor-1221 |
| 44. 1,1,2,2-Tetrachloroethane | 0.5 | 94. 1,2,4,5-Tetrachlorobenzene | 5 | 139. Aroclor-1232 |
| 45. 1,3-Dichlorobenzene | 0.5 | 95. 4-Bromophenyl-phenylether | 5 | 140. Aroclor-1242 |
| 46. 1,4-Dichlorobenzene | 0.5 | 96. Hexachlorobenzene | 5 | 141. Aroclor-1248 |
| 47. 1,2-Dichlorobenzene | 0.5 | 97. Atrazine | 5 | 142. Aroclor-1254 |
| 48. 1,2-Dibromo-3-chloropropane | 0.5 | 98. Pentachlorophenol | 5 | 143. Aroclor-1260 |
| 49. 1,2,4-Trichlorobenzene | 0.5 | 99. Phenanthrene | 5 | |
| 50. 1,2,3-Trichlorobenzene | 0.5 | 100. Anthracene | 5 | |

(TCL) based on advances in analytical methods, evaluation of method performance data, and to meet the needs of Superfund program participants. Compounds that have been added to the SOW are shaded in **Table 1**. The following modifications were made to the low concentration organic analytical service TCL:

- New volatile compounds include: dichlorofluoromethane; trichlorofluoromethane;

1,1,2-trichloro-1,2,2-trifluoroethane; methyl acetate; methyl tert-butyl ether; cyclohexane; methylcyclohexane; isopropylbenzene, and 1,2,3-trichlorobenzene.

- New semivolatile compounds include: benzaldehyde; acetophenone; caprolactam; 1,1'-biphenyl; 1,2,4,5-tetrachlorobenzene, and atrazine.

MODIFICATIONS TO METHODS

Current methods have been modified in an effort to allow CLP participants to use newer techniques or address previous issues. The following items summarize the modifications to the low concentration organic analytical service:

- i. Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis has been added to this service. This is performed only when requested by a Region for every 20 field samples in an SDG or for each SDG, whichever is most frequent.
- ii. Method Detection Limit (MDL) determination has been added to this service. This is run before any samples are analyzed under contract (annually thereafter) and after major instrument maintenance.

Volatiles

The following items were changed for volatiles:

- i. All references to System Monitoring Compounds (SMCs) have been removed. Deuterated Monitoring Compounds (DMCs) will be used

instead and are added to each sample, standard, and blank.

- ii. All references to Laboratory Control Samples (LCSs) have been removed.

Semivolatiles

The following items were added or changed for semivolatiles:

- i. All references to surrogates have been removed. DMCs are now required to be added to each sample, standard, and blank.
- ii. All references to LCSs have been removed.

For more information, or for suggestions to improve this analytical service, please contact:

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